

What is ozone and where do you find it?

Ozone is a gas with a pungent odor and is a main component of smog. Ozone occurs in the environment due to the interaction of ultraviolet light (sunlight) with a group of air pollutants called oxides of nitrogen. Upper atmospheric ozone acts to shield the earth from the harmful effects of sunlight, and should not be confused with the more dangerous ground-level ozone which is considered a form of air pollution. Background levels of ozone at ground level are usually <0.05 parts per million (ppm). Some sources that contribute to the ozone are volatile organic compounds (VOCs), such as those found in car exhaust, petroleum refining, gasoline, and dry cleaning materials. Some x-ray or ultraviolet generators, arc welding equipment, and mercury-vapor lights also produce ozone. Ozone is also used as an oxidizing agent in the chemical industry, as a disinfectant for air and water, for aging liquor and wood, and for bleaching textiles, waxes, paper pulp, and wood.

Is ozone found more at one time of the year than another?

Yes. Ozone levels in some urban areas rise from May through September. This is when higher temperatures and the increased amount of sunlight combine with the stagnant atmospheric conditions that are associated with ozone air pollution episodes (smog).

What are the health effects of ozone exposure?

Ozone is a respiratory irritant. Symptoms include shortness of breath, chest pain, wheezing, and coughing. Healthy young individuals can experience problems such as decreased lung function when exerting themselves (such as during heavy exercise) when ozone levels are elevated. There is evidence that the lung function changes experienced at higher ozone levels may persist for several days after the exposure.

Exposure to ozone concentrations in air has been linked to increased hospital admissions for respiratory ailments, including asthma. Repeated exposure to ozone can make people more susceptible to respiratory infection, lung inflammation, and can aggravate preexisting respiratory diseases.

Are some people at greater risk than others?

Children are most at risk from exposure to ozone because they play and exercise outside during the warmer months when ozone levels are at their highest. Adults who are outdoors and moderately active during warmer months, such as construction workers, are also among those most at risk. These individuals, as well as those with pre-existing respiratory disease, can experience a reduction in lung function or other respiratory symptoms, such as chest pain and cough, when exposed to relatively low ozone levels during moderate exertion.

Are there any standards or guidelines to protect people from exposures to ozone?

Yes. The Occupational Safety and Health Administration's (OSHA) standard for ozone in the workplace is 0.1 ppm, as an 8-hour, time-weighted average. The American Conference of Governmental Industrial Hygienists (ACGIH) has suggested a threshold limit value (TLV) of 0.1 ppm. In July 1997, the EPA adopted a new National Ambient Air Quality Standard (NAAQS) for ozone. Prior to July 1997, the NAAQS for ozone was 0.12 ppm, not to be exceeded during a one-hour period.

The new standard is 0.08 ppm and is an 8-hour, time-weighted average. The new standard is more protective of public health since the exposure level has been reduced over a longer period of time.

What can be done to lower the ground-level ozone in the environment?

Families and individuals can exercise wise use of automobiles, motorcycles, boats, lawn mowers, and other machinery powered by internal combustion engines. Plan and limit trips if possible, make sure vehicles or machinery are in good working order, and limit use when the ozone levels are expected to be elevated or an ozone alert is in effect.

How can I learn more about ozone?

- For additional information, please visit <http://www.cdc.gov/niosh/topics/ozone/>.
- You may also call your local health department if you have questions or concerns about ozone. A directory of local health departments is located at <http://www.vdh.virginia.gov/local-health-districts/>

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